

What is claimed is:

1. An area designing apparatus for a mobile communication system,
comprising:

means for placing a plurality of communicating mobile stations
5 corresponding to traffic distribution information;

means for deciding a base station to which each of the mobile stations
is radio linked;

means for calculating a transmission power of a desired wave signal
that each base station transmits to each of the mobile stations that are
10 radio linked thereto;

means for successively selecting one from a plurality of evaluation
positions in a state that each of the base stations is transmitting the desired
wave signals; and

means for calculating a reception power of a desired wave signal that
15 an evaluation mobile station placed at each selected evaluation position
receives from the base station that is radio linked thereto and reception
powers of interference wave signals that the evaluation mobile station
receives from the base station that is radio linked thereto and from each of
the other base stations,

20 wherein communication quality at each evaluation position is
evaluated corresponding to the calculated reception power of the desired
wave signal and the calculated reception powers of the interference wave

signals.

2. The area designing apparatus as set forth in claim 1,

wherein a random deviation amount is added to a propagation loss of
5 a signal transmitted between the evaluation mobile station placed at each
evaluation position and each base station,

wherein corresponding to the resultant propagation loss, the
reception power of the desired wave signal and the reception powers of the
interference wave signals are calculated so as to evaluate the
10 communication quality at each evaluation position, and

wherein the evaluation of the communication quality is repeated and
the ratio that represents the number of evaluation results that do not
satisfy a predetermined level is obtained.

15 3. The area designing apparatus as set forth in claim 1,

wherein the communication quality at each evaluation position in an
area that contains some of the plurality of evaluation positions is evaluated,
and

wherein a ratio that represents the number of evaluation results at
20 the evaluation positions in the area do not satisfy a predetermined level is
obtained.

4. The area designing apparatus as set forth in claim 1,
wherein the evaluation positions are decided so that some of the
plurality of evaluation positions are formed in a regular polygon shape.

5 5. The area designing apparatus as set forth in claim 1, further
comprising:

means for displaying the communication quality at each evaluation
position with visual information.

10 6. The area designing apparatus as set forth in claim 2, further
comprising:

means for displaying the ratio that represents evaluation results that
do not satisfy a predetermined level with the visual information.

15 7. The area designing apparatus as set forth in claim 1, further
comprising:

means for inputting the traffic distribution information;

means for storing the input traffic distribution information; and

means for outputting the visual information.

20 8. An area designing apparatus for a mobile communication system,
comprising:

means for placing a plurality of communicating mobile stations
corresponding to traffic distribution information;

means for deciding a base station to which each of the mobile stations
is radio linked;

5 means for calculating a transmission power of a desired wave signal
that each of the mobile stations transmits to the base station that is radio
linked thereto;

means for successively selecting one from a plurality of evaluation
positions in a state that each of the plurality of mobile stations is
10 transmitting the desired wave signal;

means for calculating a reception power of a desired wave signal that
the base station that is radio linked to an evaluation mobile station placed
at each selected evaluation position receives from the evaluation mobile
station and reception powers of interference wave signals that the base
15 station that is radio linked to the evaluation mobile station receives from
the mobile stations other than the evaluation mobile station,

wherein the communication quality at the evaluation position is
evaluated corresponding to the calculated reception power of the desired
wave signal and the calculated reception powers of the interference wave
20 signals.

9. The area designing apparatus as set forth in claim 8,

wherein a random deviation amount is added to a propagation loss of a signal transmitted between the evaluation mobile station placed at each evaluation position and each base station,

wherein corresponding to the resultant propagation loss, the
5 reception power of the desired wave signal and the reception powers of the interference wave signals are calculated so as to evaluate the communication quality at each evaluation position, and

wherein the evaluation of the communication quality is repeated and the ratio that represents the number of evaluation results that do not
10 satisfy a predetermined level is obtained.

10. The area designing apparatus as set forth in claim 8,

wherein the communication quality at each evaluation position in an area that contains some of the plurality of evaluation positions is evaluated,
15 and

wherein a ratio that represents the number of evaluation results at the evaluation positions in the area do not satisfy a predetermined level is obtained.

20 11. The area designing apparatus as set forth in claim 8,

wherein the evaluation positions are decided so that some of the plurality of evaluation positions are formed in a regular polygon shape.

12. The area designing apparatus as set forth in claim 8, further comprising:

means for displaying the communication quality at each evaluation position with visual information.

13. The area designing apparatus as set forth in claim 9, further comprising:

means for displaying the ratio that represents evaluation results that do not satisfy a predetermined level with the visual information.

14. The area designing apparatus as set forth in claim 8, further comprising:

means for inputting the traffic distribution information;

means for storing the input traffic distribution information; and

means for outputting the visual information.

15. An area designing method for a mobile communication system, comprising steps of:

placing a plurality of communicating mobile stations corresponding to traffic distribution information;

deciding a base station to which each of the mobile stations is radio

linked;

calculating a transmission power of a desired wave signal that each base station transmits to each of the mobile stations that are radio linked thereto;

5 successively selecting one from a plurality of evaluation positions in a state that each of the base stations is transmitting the desired wave signals; and

10 calculating a reception power of a desired wave signal that an evaluation mobile station placed at each selected evaluation position receives from the base station that is radio linked thereto and reception powers of interference wave signals that the evaluation mobile station receives from the base station that is radio linked thereto and from each of the other base stations,

15 wherein communication quality at each evaluation position is evaluated corresponding to the calculated reception power of the desired wave signal and the calculated reception powers of the interference wave signals.

20 16. The area designing method as set forth in claim 15, wherein a random deviation amount is added to a propagation loss of a signal transmitted between the evaluation mobile station placed at each evaluation position and each base station,

wherein corresponding to the resultant propagation loss, the reception power of the desired wave signal and the reception powers of the interference wave signals are calculated so as to evaluate the communication quality at each evaluation position, and

5 wherein the evaluation of the communication quality is repeated and the ratio that represents the number of evaluation results that do not satisfy a predetermined level is obtained.

17. The area designing method as set forth in claim 15,

10 wherein the communication quality at each evaluation position in an area that contains some of the plurality of evaluation positions is evaluated, and

 wherein a ratio that represents the number of evaluation results at the evaluation positions in the area do not satisfy a predetermined level is
15 obtained.

18. The area designing method as set forth in claim 15,

 wherein the evaluation positions are decided so that some of the plurality of evaluation positions are formed in a regular polygon shape.

20

19. The area designing method as set forth in claim 15, further comprising:

a step of displaying the communication quality at each evaluation position with visual information.

20. The area designing method as set forth in claim 16, further comprising:

a step of displaying the ratio that represents evaluation results that do not satisfy a predetermined level with the visual information.

21. The area designing method as set forth in claim 15, further comprising steps of:

inputting the traffic distribution information;

storing the input traffic distribution information; and

outputting the visual information.

22. An area designing method for a mobile communication system, comprising steps of:

placing a plurality of communicating mobile stations corresponding to traffic distribution information;

deciding a base station to which each of the mobile stations is radio linked;

calculating a transmission power of a desired wave signal that each of the mobile stations transmits to the base station that is radio linked

thereto;

successively selecting one from a plurality of evaluation positions in a state that each of the plurality of mobile stations is transmitting the desired wave signal;

5 calculating a reception power of a desired wave signal that the base station that is radio linked to an evaluation mobile station placed at each selected evaluation position receives from the evaluation mobile station and reception powers of interference wave signals that the base station that is radio linked to the evaluation mobile station receives from the mobile
10 stations other than the evaluation mobile station,

 wherein the communication quality at the evaluation position is evaluated corresponding to the calculated reception power of the desired wave signal and the calculated reception powers of the interference wave signals.

15 23. The area designing method as set forth in claim 22,
 wherein a random deviation amount is added to a propagation loss of a signal transmitted between the evaluation mobile station placed at each evaluation position and each base station,

20 wherein corresponding to the resultant propagation loss, the reception power of the desired wave signal and the reception powers of the interference wave signals are calculated so as to evaluate the

communication quality at each evaluation position, and

wherein the evaluation of the communication quality is repeated and the ratio that represents the number of evaluation results that do not satisfy a predetermined level is obtained.

5

24. The area designing method as set forth in claim 22,

wherein the communication quality at each evaluation position in an area that contains some of the plurality of evaluation positions is evaluated, and

10

wherein a ratio that represents the number of evaluation results at the evaluation positions in the area do not satisfy a predetermined level is obtained.

25. The area designing method as set forth in claim 22,

15

wherein the evaluation positions are decided so that some of the plurality of evaluation positions are formed in a regular polygon shape.

26. The area designing method as set forth in claim 22, further comprising:

20

a step of displaying the communication quality at each evaluation position with visual information.

27. The area designing method as set forth in claim 23, further comprising:

a step of displaying the ratio that represents evaluation results that do not satisfy a predetermined level with the visual information.

5

28. The area designing method as set forth in claim 22, further comprising steps of:

inputting the traffic distribution information;

storing the input traffic distribution information; and

outputting the visual information.

10